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AUTHOR Greer, John T.; Lockridge, Burma L.
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ABSTRACT

This paper presents a model for the identification and validation of competencies, designed as an all-inclusive framework, which may be adapted for specific situations. The criteria for including data in the validation process are as follows: (a) if the data are to be employed in making decisions about individuals or groups, all available evidence should be gathered before attempting to interpret the results; (b) if the data are to be used for prediction or selection, the instruments should be validated in the specific situation for which they are to be employed; and (c) ideas about what is being measured as well as what the instruments measure must change as new evidence is forthcoming. LOGOS (Language for Optimizing Graphically Ordered Systems), used in the development of this model, outlines the processes for meeting the proposed project objectives. The LOGOS model, consisting of two cells--developing competency statements and establishing construct validity and reliability, is outlined at the conclusion of this paper. A 21-item bibliography is included. (PD)

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A VALIDATION MODEL FOR ADMINISTRATIVE COMPETENCIES

John T. Greer and Burma L. Lockridge
George State University

The existence of performance based teacher and administrator certification programs needs little documentation. Legislatures, state departments of education and other regulatory agencies are mandating that candidates for professional education credentials demonstrate specific competence in predetermined teaching or administrative activities.

An interesting assumption is made by those supporting the competency movement. While no claims of perfection for the competency approach are made, the dissatisfaction with earlier teacher and administrator program formats is readily acknowledged. The essence of the argument is that the competency approach takes a giant step toward better preparation through its insistence on actual performance. Such performance resting on a foundation of knowledge and skills is seen as a necessary and logical extension of previous efforts.

A nagging question remains, however. At present there is no solid evidence to support the contention that those in possession of the predetermined competencies are better teachers or administrators than those unable to demonstrate the competencies. This question must remain unanswered for the time being because prior questions of validity and reliability must first be settled. The best that can be said is that logic alone supports the contention that those who can demonstrate some teaching or administrative competencies are better teachers or administrators than those who cannot.

Research in competency based curriculums for administration and supervision includes studies to identify and specify competencies, develop models for identifying competencies, develop models for competency based training programs, develop actual training programs, and evaluate methods of attaining competencies. Of the works reviewed, eleven dealt with the identification and statement of administrative competencies. Five identified competencies through a search of the literature, one used the critical incident technique, and one used a jury of experts. Others did not specify the source of their competency statements. Validation procedures consisted almost exclusively of judgments by a jury or panel of experts with little attention to the generation of statistical evidence of validity.

A notable exception was the study by Cook and Van Otten, University of Utah, (1972) "...to identify some of the prime competencies of the secondary school principalship and to report the attitudes of school district superintendents, secondary school principals and secondary school teachers concerning their importance" (p. xi). Correlation data were used to determine the perceptions of the subjects as to what "are" and what "ought" to be primve competencies of secondary school principals and to rank the competencies in the order of importance.

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The Validation Model

Precise statements of competencies and the development of assessment instruments to measure them can do much to further the professional status of education. General acceptance of these statements, however, will depend largely on the

evidence that possession of the competencies actually makes a difference in the quality of performance. A more rigorous and systematic approach to the validation process is one way to provide this evidence.

A joint committee of the American Educational Research Association, the American Psychological Association, and the National Council of Measurements Used in Education identified four types of validity (Technical Recommendations..., 1954). The first, content validity, is the representativeness or sampling adequacy of the universe of content. The second and third, predictive and concurrent validity, are criterion related, characterized by prediction to an outside criterion and by checking a measuring instrument either now or in the future by some outcome. The fourth type, construct validity, is involved in interpreting a measure of some attribute or quality which is not operationally defined.

The consistency with which an instrument measures a construct does not satisfy but limits validity. An instrument must be reliable in order to be valid, but reliability does not ensure validity. Chase and Ludlow (1966) identified three types of reliability coefficients: (1) internal consistency, (2) equivalence, and (3) stability. Determination of acceptable reliability coefficients is a major part of the validation process.

The validation model illustrated in Figure 1 has been designed as an all-inclusive framework which may be limited or adapted for specific situations. It is not necessary in every case to utilize all the processes in every cell to achieve an acceptable measure of validity. Tyler (1963) suggested three criteria for including data in the validation process:

1. If the data are to be employed in making decisions about individuals or groups, all available evidence should be gathered before attempting to interpret the results.

2. If the data are to be used for prediction or selection, the instruments should be validated in the specific situation for which it is to be employed.

3. Ideas about what is being measured as well as what the instruments measure must change as new evidence is forthcoming.

The systems methodology LOGOS was used in the development of the model for the Identification and Validation of Competencies. LOGOS is an acronym derived from the title Language for Optimizing Graphically Ordered Systems (Silvern, June, 1969). The model is composed of two major cells: 1.0 -- Develop Competency Statements, and 2.0 -- Establish Construct Validity and Reliability (see Figure 1). The processes for meeting the proposed project objectives are outlined and ordered in the LOGOS model.

1.0 - Develop Competency Statements. Researchers work in the field with administrators to develop competency statements.

1.1 - Assess Competency Needs.

1.11 - Conduct Job Analysis of Function. Job Analysis by function seems appropriate since the use of functions as a basis for classification promises more discrete statements of competencies.

1.12 - Identify Critical Incidents. Critical incidents provide a reality-oriented base for the analysis of competency needs.

1.2 - Develop Competency Categories. Competency categories are developed through analysis of the job functions and critical incidents developed in cell 1.1.

1.3 - Specify Competencies for Categories and Identify Behaviors. Three processes will be combined to identify specific competencies and illustrative behaviors. The processes are:

1.31 - Conduct Literature Review.

1.32 - Analyze Critical Incidents.

1.33 - Review Job Analyses.

By using a combination of the three techniques the investigators will be able to include the "ideal" as well as the"real."

1.4 - Develop Competency Rating Scale. This rating scale is used to gather data for determining the construct validity and reliability of the competencies.

1.41 - Establish Content Validity. Content validity is accomplished using the following techniques:

1.411 - Conduct Panel of Expert Rating.

1.412 - Conduct Rating by Practicing Administrators.

1.413 - Develop List of Additional Competencies.

1.5 - Develop Revised Competency Rating Scale. Establish criteria for adding and removing competencies from the rating scale.

1.51 - Add Competencies. Competencies mentioned often by the judges should be added to the rating scale.

1.52 - Eliminate Competencies. Competencies ranked low by a majority of the experts are removed from the competency rating scale.

2.0 - Establish Construct Validity and Reliability. Stanley and Hopkins (1972) have delineated four steps in the process of developing a measure of psychological constructs and establishing its validity. The steps included: (1) develop a set of tasks or items based on a rational analysis of the construct, (2) derive testable predictions regarding the relationship between the construct and other variables, (3) construct empirical studies of these theoretical predictions, and (4) eliminate tasks or items that operate contrary to the theory (or revise the theory) and proceed again with steps two and three. The first step in the Stanley and Hopkins process is accomplished in cell 1.0 of the LOGOS model. The remaining three steps are completed in cell 2.0.

2.1 - Derive Testable Hypotheses. Samples of possible hypotheses are:

1. Principals of innovative schools will demonstrate a greater number of leadership competencies than principals of traditional schools.

2. Building level administrators ranked in the top one-third of the district by superordinates will be rated higher on the competency rating scale than a random sample of building level administrators.

3. There will be a positive correlation between ratings on the competency scale and other validated instruments developed to measure leadership.

2.2 - Gather Raw Data for Empirical Testing. Data gathering is done in the one major step included in cell 2.21.

2.21 - Administer Instruments. Peers, subordinates and superordinates, trained observers, and the subjects themselves rate selected groups of administrators on the competency rating scale and other selected leadership measurement instruments. Data from the ratings are analyzed as follows:

2.3 - Analyze Data.

2.31 - Test Hypotheses.

2.32 - Determine Discrimination Index.

2.33 - Conduct Factor Analysis. Nunnally (1972), Cronbach and Meehl (1955), and Kerlinger and Kaya (1959) identified factor analysis as an important part of construct validation. This is an effective tool for eliminating "gaps and overlaps" (McIntyre, undated, p. 18) in the competency statements and for determining the reality of the factors.

2.34 - Conduct Analysis of Variance. Analysis of variance techniques are used to determine that portion of the variance which can be attributed to the construct being measured.

2.35 - Correlate with Other Validated Instruments. Hypotheses concerning the correlation of the competencies with other validated instruments which measure related constructs are generated and tested.

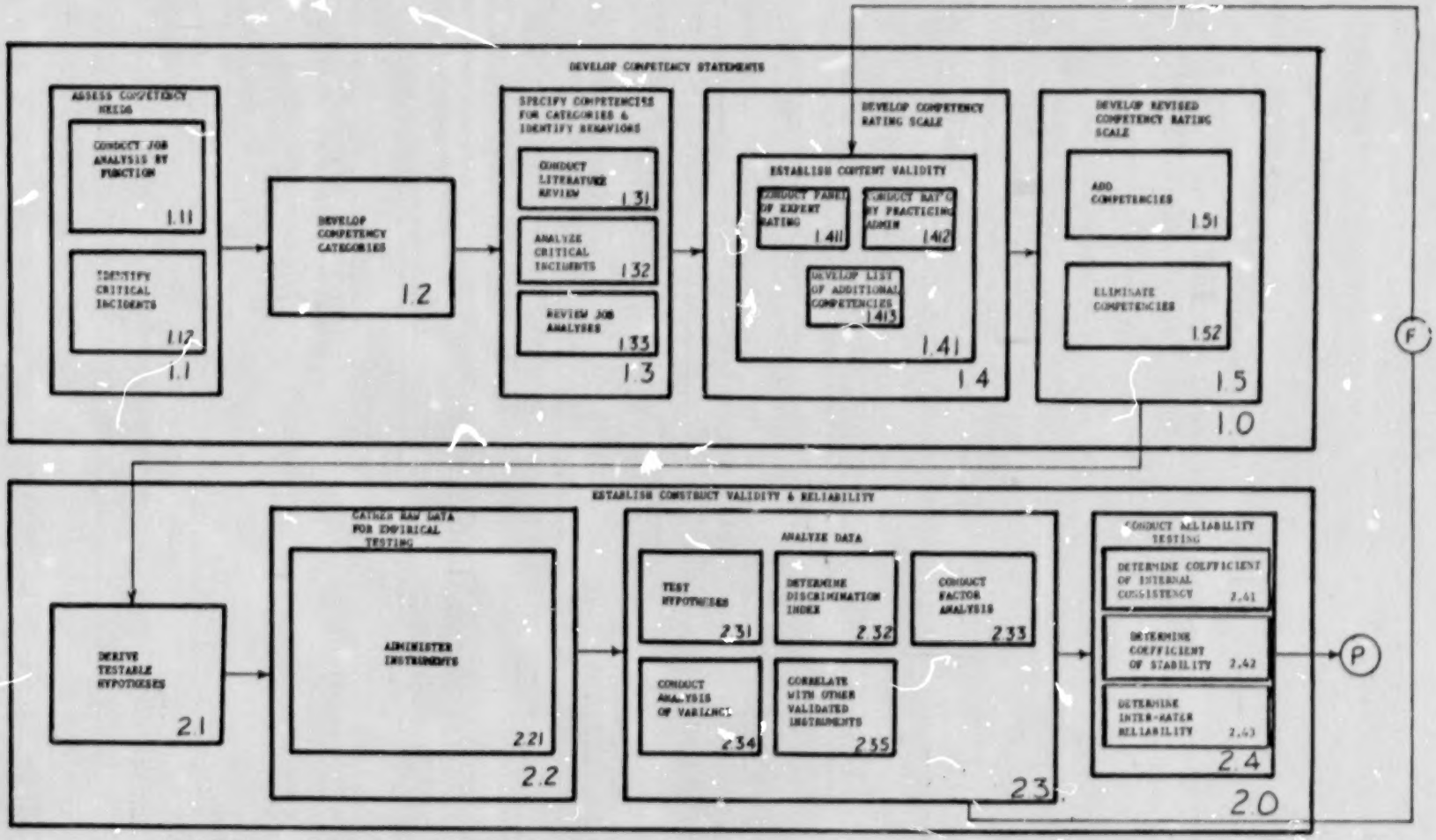
2.4 - Conduct Reliability Testing. A measurement instrument must be reliable in order to be valid, but reliability does not ensure validity. Reliability coefficients are established in this cell.

2.41 - Determine Coefficient of Internal Consistency.

2.42 - Determine Coefficient of Stability.

2.43 - Determine Inter-rater Reliability.

If data analyses lead to major revisions in the competency rating scale, the process feedback to cell 1.4 and cells 1.5, 2.1, 2.2, 2.3 and 2.4 are repeated.



MODEL FOR IDENTIFICATION AND VALIDATION OF COMPETENCIES

The Validation Model was adapted to the LOGOS Methodology by Paul A. Montello, Associate Professor, Georgia State University

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